Enriching the Energy Economy through Collaboration with Institutions of Higher Learning

April Salas
Executive Director, Revers Center for Energy
Tuck School of Business, Dartmouth College

May 2017
What I plan to cover today...

A little bit about the Revers Center for Energy
What’s going on across Dartmouth?
What is the town of Hanover up to?
What could engagement look like?
Questions
Tuck School of Business

Name: The Amos Tuck School of Business Administration
Location: Hanover, New Hampshire
Dean: Matthew J. Slaughter
Founded: January 19, 1900
Degree Granted: Masters of Business Administration
Dual Degree Opportunities: MD, MPH, PhD, + SAIS/Hopkins, Fletcher School at Tufts, Vermont Law School, Harvard, other non-degree programs include MEM/Thayer, Business Bridge, and Executive Education
Class of 2018 statistics:
- 285 students, 44% women, 30% international, 18% minorities, 3.5 gpa avg, 717 gmat avg
Endowment: $282 million
Rankings:
- Financial Times: #10 in US (2017); #18 worldwide (2017)
- Bloomberg Businessweek: #5 (2016)
- The Economist: #6 (2016)
Peer Schools: Harvard, Stanford, Wharton, MIT Sloan, Northwestern (Kellogg), Chicago (Booth)
Revers Center for Energy

In 2012...

- Dan Revers T’89, a Tuck overseer and co-founder of ArcLight Capital Partners, endowed a professorship, and provided the funding to launch the Revers Energy Initiative
- The initiative set Tuck on the path to becoming the preeminent business school for learning practical leadership in the energy industry
- In October 2016, Dan Revers generously endowed the Revers Energy Initiative catalyzing the transition to the Revers Center for Energy at Tuck

Fast forward to today....

- Over 90 students enroll in Energy Economics each year
- 37 students across five MBA class years -- current and alumni Revers Energy Fellows -- are working within all parts of the energy value chain; 5 ‘energy’ companies started
- Center funding has supported:
  - Industry treks to Utah, Colorado, and Canada
  - Travel to energy case competitions, IHS CERAWeek, and the Global Energy Forum
  - Energy short courses, e.g., power and gas 101, principles of power purchase agreements, commodities trading, drilling 101
- Established Energy Leadership Mentorship Program to provide direct access to successful energy industry leaders and facilitate a transfer of knowledge, wisdom, resources, and life experiences

CENTER AT A GLANCE

- Revers Gift Propels New Energy Center at Tuck
Managers in today’s global energy industry face complex and multidisciplinary issues, amplified by changing market dynamics, evolving business models, and pressures to increase sustainable business practices. The Revers Center for Energy supports students’ exploration of these challenges and development of the tools needed to tackle them.

Our purpose is to foster leadership and management solutions in the global energy industry through three major functions: MBA program enhancement, scholarship, and corporate and alumni outreach.

Our mission is to inspire and shape tomorrow’s leaders in energy while engaging today’s energy community.

Our vision is to establish Tuck as the preeminent business school for learning practical leadership in the energy industry.

Educating wise leaders to better the world of business!
In her capacity as Executive Director, April oversees a breadth of programming designed to transform Tuck into the preeminent business school for energy leadership. April works in collaboration with the Faculty Director and the Dean's office to enhance the MBA curriculum, support scholarly activity, and connect with alumni and corporations to build support for Tuck's energy-related activities.

April comes to Tuck with ~15 years of global energy industry and government experience. Several of her key leadership positions include serving as the Director of the White House-led Quadrennial Energy Review Task Force Secretariat, Chief of Planning and Analysis for US energy emergency response, and Director for State Energy Assurance and Resilience within the Office of Electricity Delivery and Energy Reliability.

April has an MBA from Cornell University, two master's degrees in International Affairs, Security and Economics, and a BA from the College of William and Mary.

Her husband Zach, a retired naval aviator, is a medical student at Geisel School of Medicine at Dartmouth. They have three children.

April Salas – Executive Director

Erin Mansur – Faculty Director & Revers Professor of Business Administration

Professor Erin Mansur is the Revers Professor of Business Administration at the Tuck School of Business at Dartmouth. He is also a research associate at the National Bureau of Economic Research, an adjunct professor (by courtesy) in the Economics Department at Dartmouth, and the Faculty Director of the Revers Energy Initiative at Tuck, where he teaches Energy Economics.

His interests are in the fields of industrial organization and environmental economics, focusing primarily on questions regarding energy markets and energy policy. Recent papers examine how hydrofracking affects local employment and wages, how low natural gas prices affect power plants' emissions, how mergers of vertically integrated firms affect electricity market outcomes, and how charging electric cars affects power plants' emissions.


Prior to joining Tuck, he taught the Department of Economics at Dartmouth College, the School of Management at Yale University, and the School of Forestry and Environmental Studies at Yale University. He holds a B.A. from Colby College and a Ph.D. in Economics from the University of California at Berkeley.
Meet our Fellows

Our incoming fellows range in expertise / interest from:
- Grid scale battery storage and energy security
- Supply chain optimization
- Clean energy and real estate development
- Banking, Power and utilities Group
- Solar Development, Operations
- Private Equity, Clean Energy Finance
- Clean Tech Startup focused on water conservation and power generation
### Pathways for our students...

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<td>World Fuel Sercies</td>
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<td>Ambri</td>
<td>Soligent</td>
<td>Green Mountain Power</td>
<td>Customer First Renewables</td>
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<td>Advanced Microgrid</td>
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### Geographically:  
- Boston  
- New York  
- Houston  
- Bay Area  
- Denver  
- Washington, DC  
- Chicago

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<th>September</th>
<th>December</th>
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<td>On-campus</td>
<td>Winter / Spring off-campus</td>
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<td>5%</td>
<td>20%</td>
<td>75%</td>
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**Tuck**  
Dartmouth  
Hanover  
Engagement
Center Programs and Events

- First-year Energy Club
- Second-year Fellows
- Energy Leadership Mentorship
- Center Experiential Learning Projects

Joint Programming
- Arthur L. Irving Institute for Energy and Society
- Dartmouth energy and sustainability efforts
- CDO – CIX and general career development
- FYP, On-Site Global Consulting, GIX
- Joint Center Projects
- Admissions

Activities
- Speaker series
- Workshops and seminars on energy topics, e.g., power and gas 101, drilling 101, and principles of power purchase agreements
- Local energy treks, e.g., Green Mountain Power’s Stafford Hill Solar Farm
- Case competitions, e.g., National Energy Finance Challenge, Renewable Energy Case Competition
- Industry conferences, e.g., Global Energy Forum, CERAWeek, ARPA-E Innovation Forum
- Business school conferences, e.g., HBS Energy & Environment Conference, Wharton Energy, and MIT Energy

Engagement
Opportunities to build experience ...

There are energy-related activities and programming that help build student experience:

- **Elective Courses**: Energy Economics, Business and Climate Change, Sustainable Business
- **Energy Workshops**: Power and Gas 101, Drilling 101, Principles of Power Purchase Agreements, Commodities Trading
- **First-year Projects**: Ambri, Irving, SparkCognition, Hive Battery
- **Center Projects**: Center Experiential Learning Project, Independent Study
- **Speaker Series**: Earth Week, Business and Society Conference, Climate Change Speaker Series, Inauguration
- **Case Competitions**: Questrom Net Impact Case Competition, Energy Finance (UT Austin/McCombs), Renewable Energy (Ross School of Business)

An individualized program to enhance your perspective, deepen your experiences, and create impact.
Example Projects...

- Greenhouse gas offset report
- Portfolio approach to marketing LNG
- Commercialization strategy for grid scale battery storage
- Asset optimization of a Caribbean energy unit
- Wind and solar studies
- Fuel switching options
- Conversion from steam to hot water heating
Center Affiliated Mentors

Our mentors hail from:

- GE
- NEC
- Calpine
- Siemens
- Ambri
- Arclight
- BithGroup...to name a few

... We are always looking to enhance partnerships through mentorship!
What’s going on across Dartmouth?

Energy, environment and sustainability at Dartmouth is widespread:
- Office of Sustainability, Dartmouth Organic Farm, Energy Cluster, Arctic Program
- Environmental Science, Geology, Geography, Regional Studies
- Sustainability Task Force and Report: Our Green Future
  - President Hanlon commissioned task force to develop plans supportive of Dartmouth’s goals of playing a leadership role in improving sustainability and overcoming the challenges of climate change
  - 50% of campus energy from renewable sources by 2025; 100% by 2050
  - 50% reduction in GHG by 2025; 80% by 2050
  - More efficient campus energy distribution system
  - Targets in areas of waste, food, water, transport, landscape and ecology and goals for assessing, measuring and establishing standards

The Arthur L. Irving Institute for Energy and Society:
- $160MM college-wide commitment to developing the next generation of leaders to tackle global energy challenges
- Energy efficient, LEED certified designed building between business and engineering school
- Research focus, integrating expertise of Dartmouth's liberal arts faculty, with potential for new faculty focused on intersection of energy AND society

The Campus is to become a living lab...
Efforts across the Upper Valley

Hanover becomes the first town in New Hampshire to commit to 100% renewable energy!

- Tuesday, May 9, 2017 marks the town vote that endorsed the goal of transitioning to 100% renewable electricity by 2030 and heating and transportation energy by 2050.
- Article 23 passed around 10:00pm by popular vote with ~250+ residents in attendance.
- Hanover is the 29th city in the country to commit to 100% renewable energy and the first to embrace the goal by popular vote!
- Hanover joins other cities, towns and municipalities such as San Diego, Atlanta, Burlington, East Hampton, Boulder, Palo Alto, Park City, Grand Rapids, Salt Lake City, San Francisco, South Lake Tahoe, Taos, St. Petersburg, and others…

The Sustainable Hanover Committee – the town’s energy committee – in partnership with Sierra Club, and energy committees of neighboring municipalities have been working towards this and similar goals.

- In 2014, Hanover was named the EPA’s first Green Power Community in New Hampshire.
- Hanover is currently powered by 22% electricity from green-e certified on-site solar.

UV Green Power Challenge
- Focused efforts ranging from community solar, to sustainable landscapes, to reviewing Hanover’s master plans and incorporating both sustainability and resilience.
- Partnerships with local businesses as well as local school sustainability committees.

163.8kw Group Net-metering project in Hollis, NH.
Opportunities for Engagement

- Bottom line – the energy ecosystem is vast, and opportunities for engagement are plentiful! Here are a few ways that we can think of...
  - Energy treks and/or site visits to key infrastructure
  - Participation in or observing key meetings
  - Career shadowing
  - Experiential learning student projects
  - Commissioned studies
  - Convening private stakeholder meetings
  - Leveraging faculty expertise
  - Student internships
  - Career development
  - Leadership development

- We would love to hear your ideas? What are your needs?

Thank you...

April Salas
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Revers Center for Energy: http://www.tuck.dartmouth.edu/revers/